CHAPTER 6

# CIRCULATION

## BASIS AND STRUCTURE

An efficient, multi-modal transportation network is critical to the overall vision for the Meadowlands District. The system network must have the capacity to meet the challenges associated with the balancing of planned redevelopment and new development, the retention and growth of commercial enterprises and jobs, the preservation and enhancement of the Meadowlands, and the movement of through traffic. This chapter presents an overview and identification of the main issues facing the District's transportation systems, including local roadways, regional highways, railways, aviation facilities, waterways, bicycle and pedestrian facilities. Chapter 10 will acknowledge these challenges as it sets forth a series of strategies for maintaining and improving the transportation network that serves the Meadowlands District and the greater region.

## EXISTING CIRCULATION SYSTEM

The Meadowlands District is located in the heart of the New York/New Jersey Metropolitan region, which includes New Jersey's most densely populated counties, Hudson, Bergen, Essex, and Passaic, and their major cities, Jersey City, Newark and Paterson. According to a survey by the New York Metropolitan Transportation Council (NYMTC), the volume of persons traveling on a daily basis in Bergen and Hudson counties totaled 4.3 million in 1998. Bergen County experienced 3,056,000 person trips on an average weekday; Hudson County had 1,272,000 person trips.

The roadways that traverse the District are among the most heavily traveled in the nation. The principal mode of transportation in the region is the automobile, accounting for 68 percent of all trips. Public transit, on the other hand, accounts for just 15 percent. The majority of automobile and transit trips on the District's roads and railways throughout the District have origins and destinations outside the District. The District serves as the gateway to New York City through a variety of major roadways, including the New Jersey Turnpike and Route 3. The NYMTC survey found that a total of 63 percent of the transit trips in the region are made to Manhattan. Bergen County accounted for 18 percent of the total work trips to Manhattan, while 29 percent of the total originated in Hudson County.

Use of mass transit in the northern New Jersey region is relatively low, considering the high degree of urbanization and the overall population density. In Bergen County, just 3.4 per-

cent of the persons (trips) in 1998 used transit. A total of 18 percent of persons (trips) originating in Hudson County took transit.

A high proportion of person trips terminate in the county of origin. In Bergen County, 79 percent of the person trips generated within the county remained there. For Hudson County, 70 percent of the person trips remained within the county.

## Vehicle Access

The District and surrounding region are mainly dependent on the roadway system for transporting people and goods. Public transit is more efficient than the automobile in terms of enabling more passengers per vehicle, greater fuel efficiency per passenger, and lower emissions per passenger. Access to public transit, however, remains limited in many parts of the region including the Meadowlands District. The automobile's advantages to the consumer are perceived independence, convenience and flexibility compared to other modes of transportation. Consequently, the automobile will likely continue to be the dominant mode of transportation. Commuting data underscore this attachment to the automobile, as a full 48.9 percent of all weekday trips in the region are by single occupant vehicles (SOV's). According to the NYMTC survey, data for northern New Jersey alone show that SOV's account for 59.7 percent of weekday travel modes.

The District's roadway network consists of four major road types: local, collector, arterials, and freeways/expressways, commonly called highways. Local roads provide direct access from residential, commercial and industrial areas and are generally short in distance, resulting in lower speed limits and minor traffic volumes. Collector roads provide access from local roads that connect to residential, commercial and industrial areas. Collector roads lead to arterial roadways that have a greater traffic volume capacity and provide for higher operating speed limits of 35 to 45 mph. Highways are generally limited access roadways that function as primary arterials consisting of several lanes per direction with no parking lanes. Highways are designed to operate at higher continuous operating speed limits of 45 mph to 65 mph. They are designed to provide for a high degree of mobility and to serve a regional area. Additional criteria are included in Figure 6.1. The roadway network within the District is presented as Map 9.

The following summarizes the physical characteristics of the major highways and roadways within and around the District.

**Highways/Major Arterials**

There are three main types of highways and major arterial roads:

> **Interstate Highways**: Interstate highways that traverse the District include the New Jersey Turnpike/I-95, with major north to south access; Interstate 495, providing east to west access to the Lincoln and Holland tunnels from the Turnpike and Route 3; and Route I-280, providing east to west access from western counties to both spurs of the NJ Turnpike and to the Newark-Jersey City Turnpike and the Holland Tunnel.

## FIGURE 6.1 Functional Classification of Roadways

| Criterion | Expressway/ Freeways | Principal Arterial | Minor Arterial | Major/Minor Collector | Local Street |
|---|---|---|---|---|---|
| Functional Role | Entirely through traffic movement with limited or no direct access to property. | Mobility is primary, access is secondary. Connects Freeways and other Arterials. | Connects Freeways, Principal Arterials and lower-classification roadways. Access is secondary. | Collects traffic destined for the Arterial network. Connects Arterials to Local Streets. Also land access. | Access is primary. Little through movement. |
| Roadway Continuity | Inter-city, regional and interstate. | Connects Freeways to lower-classification roadways. Connect major activity centers. | Connect Freeways and Principal Arterials to lower-classification roadways. | Continuous between Arterials. May extend across Arterials. | Discontinuous. Connect to Collectors. |
| Roadway Length | Usually more than 5 miles long | Usually more than 5 miles long | Usually more than 3 miles long | Varies from about 1/2 mile to 2 miles | Generally less than 1 mile long |
| Traffic Volumes | 40,000 Vehicles per Day or more | 20,000 to 60,000 VPD | 5,000 to 30,000 VPD | 1,000 to 15,000 VPD | 100 to 5,000 VPD |
| Desirable Spacing | 5 miles or more | 2 miles or more | Generally 1/2 mile to 2 miles | Generally 1/4 to 1/2 mile | Varies with block length (at least 125 feet between) |
| Posted Speed | 55 to 65 MPH | 35 to 55 MPH | 30 to 45 MPH | 35 MPH or less | 20 to 30 MPH |
| Access | Controlled access. Grade-separated interchanges and frontage/ service roads. | Intersect with Freeways, Arterials, Collectors and Local Streets. Restricted driveway access. | Intersect with Freeways, Arterials, Collectors and Local Streets. Limited driveway access. | Intersect with Arterials and Local Streets. Driveways permitted. | Intersect with Collectors and Arterials. Driveways permitted. |
| On-Street Parking | Prohibited | Restricted | Restricted | Normally permitted | Permitted |
| Community Relationship | Define neighborhood boundaries. | Define neighborhood boundaries. | Define and traverse neighborhood boundaries. | Internal and traverse neighborhood boundaries. | Internal. |
| Through Truck Routes | Yes | Yes | Permitted | No | No |
| Bikeways | No | Limited | Limited | Yes | Yes |
| Sidewalks | No | Limited | Yes | Yes | Yes |

**State/US highways**: The State highways that travel through or next to the District include Route 3, a major east to west highway; Route 120, which connects Route 3 to Paterson Plank Road; Route 17, a major south to north highway providing access from Route 3 to points north; Route 46, an old federal highway providing access from western counties to southern Bergen County; and Routes 1&9/Tonnelle Avenue along the eastern border of the District. These highways provide major regional vehicular access to the District from Essex County (to the west), Union County (to the south), and to other parts of Hudson and Bergen counties and New York City.

**Arterial/Collectors- State and County Roadways**: Arterial and collector roadways in the District include Paterson Plank Road, County Road 503/ Moonachie Road, County Avenue/New County Road, County Road, Meadowland Parkway, Secaucus Road, CR 36/Moonachie Avenue, CR 43/Redneck Avenue, CR 506 (Section of Belleville Turnpike/Route 7), and the Newark/Jersey City Turnpike. County Road 55, known as Hoboken Road, is located on the border of the District parallel to Paterson Plank Road in East Rutherford and Carlstadt.

**Local Road -** Local roadways in the District can be categorized into two main types:

**Local Collectors:** Local streets serve commercial, retail, manufacturing and industrial uses. These roads generally provide access to either county roadways or major highways that traverse the District. Local streets tend to have low to moderate traffic volumes during off-peak hours.

**Private Roadways:** There are several private roads maintained by a property owner or the corresponding municipality. These roads range from shared driveway roads that provide access to several businesses to roads with through traffic access between two or more points within the corresponding town that operate as collector roadways.

The capacity of the District's roadways can be evaluated by the Level-of-Service (LOS) system. LOS is developed by a set of calculations outlined in the Highway Capacity Manual (HCM), a set of roadway capacity analysis procedures prepared by the National Research Council's Transportation Research Board. A general description of level-of-service and associated travel delay numbers for signalized intersections, described in seconds of travel delay, is shown in Figure 6.2 on page 6-6. The LOS describes the capability of a given roadway based on roadway conditions such as traffic volume, time, and roadway design factors. The LOS is a letter system, starting with the letter "A" to represent an efficiently operating roadway with low levels of traffic delay. The lowest grade letter "F" represents a poorly operating roadway intersection with high levels of traffic delay.

Traffic volume data for the major roadways are included in Figure 6.3 on pages 6-7 and 6-8. The table consists of traffic volume data concerning total daily volume (AADT) or peak hour travel time periods. The existing traffic volume capacity and associated level-of-service (LOS) were provided by several sources, including the New Jersey Department of Transportation, North Jersey Transportation Planning Authority, and Bergen and Hudson counties. Another source of LOS data is the traffic impact studies prepared by transportation agencies and private traffic planning firms in connection with development applications submitted to the NJMC.

Based on the data, the weekday morning peak traffic periods start at 6:00 AM and end at 9:00 AM, with the heaviest traffic volume occurring between 8:00 AM and 9:00 AM. The afternoon peak period starts at 3:30 PM and ends at 7:00 PM, with the greatest afternoon traffic volume occurring between 5:00 PM and 6:00 PM. The Saturday peak period begins at 11:00 AM and ends around 1:30 PM.

Certain roadways within and/or leading to the District have experienced higher traffic volumes than other roadways, as well as a greater share of traffic related accidents. Based on accident trend data from the New Jersey Department of Transportation, the majority of these accidents occur during clear weather days, on dry surfaces, and during daylight hours. Consequently, weather or roadway surface conditions are not the primary causes. Instead, accidents can likely be attributed to driver inattention, faulty roadway design, and high traffic volume. The concentration of accidents at specific locations suggests the need for further investigation with respect to roadway and intersection design.

In addition to accidents, a number of mobility issues impede traffic and transit flow in the District. The principal cause in the reduction of mobility is the increase in traffic congestion that corresponds to increases in population, housing, and commercial/office development; the economic vitality of the District and the larger region; and a shift in population from northeastern New Jersey to central and west sections of New Jersey. These trends contribute to increasing traffic delays, longer commuting times, and congested highways.

More drivers, more cars, and more people produce additional travel demands on all major roadways and transit systems. The added travel demands are partially due to patterns of residential and commercial development that promote greater distances between origins and destinations. The spread of development over longer distances contribute to the dependence on the automobile. Also, there is a lack of transportation alternatives, particularly in public transit systems. Public transit does not receive the same amount of public or legislative support given to roadway systems, due to the additional capital costs and annual operating funds associated with bus and rail systems. The added auto traffic has contributed to the deterioration of the region's roadway infrastructure and existing capacity.

Mobility issues within the District concerning both automobiles and trucks stem from the inadequate capacity of major roadways, particularly Routes 3, 17, 120, and the New Jersey Turnpike; limited roadway crossings over the Hackensack River; and insufficient interstate highway access. Restrictive street patterns and limited access to major roadways hinder truck traffic.

The Department of Transportation has promoted various remedies to mobility issues, such as Transportation System Management (TSM). TSM is aimed at producing cost effective solutions using existing transportation facilities. TSM includes Transportation Demand Management (TDM) programs, such as High Occupancy Vehicle (HOV) lanes, ride-sharing, modified work schedules, minor roadway improvements, and the promotion of public transit use. To date, TDM programs have been ineffective in reducing traffic congestion, due to insufficient funding and the lack of public and private support toward these programs.

## FIGURE 6.2
**Levels-of-Service for Signalized Intersections**

| Level of Service | Vehicle Delay Range in Seconds (pre-1997 HCM) | Vehicle Delay Range in Seconds (1997 HCM) | Traffic Flow | Driver Reactions |
|---|---|---|---|---|
| **A** | 5 or Less | 10 or Less | Free Flow | Driver has no restriction |
| **B** | 5.1 to 15 | 10.1 to 20 | Stable Flow | Driver has minor restriction |
| **C** | 15.1 to 25 | 20.1 to 35 | Stable Flow | Driver restriction is minor acceptable delay (desirable design LOS) |
| **D** | 25.1 to 40 | 35.1 to 55 | Unstable Flow | Increased restriction and signs of congestion |
| **E** | 40.1 to 60 | 55.1 to 80 | At Capacity | Substantial restrictions and delays |
| **F** | 60 or More | 80 or More | Beyond Capacity | Traffic congestion and very long delays |
| ***** | Beyond Calculation | Beyond Calculation | Over-saturation of Traffic | Extreme traffic delays |

Note: Level-of-Service descriptions are based on "control delay" as outlined in the 1997 Highway Capacity Manual revision. Traffic delays based on versions of Chapter 9 prepared in 1994 or earlier only include "stop delay" which result in lower delay times compared to the 1997 HCM delay time calculations.

*Sources: Highway Capacity Manual, Special Report 209; Transportation Research Board, National Research Council, Washington, D.C. Revised Dec. 1997; Chapter 9, pp. 9-6, 9-7, 9-8.*

# FIGURE 6.3 Traffic Volume & Level of Service (LOS) by Roadway Classification

| Intersection/Roadway Location | | Roadway | Data | Intersection Vehicle Volume by Peak Hour Period | | | AADT* | Intersection LOS by Peak Hour Period | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Road name(s) | Road name(s)/Location | Classification | Year | AM | PM | Saturday | Dir. A / B | AM | PM | Saturday |
| NJ Turnpike Int. 16W | Route 3/Sports Complex | Freeway/Interstate | 1994 | 4157 | 3479 | n/a | n/a | n/a | n/a | n/a |
| Route 280 | near Harrison | Freeway/Interstate | 1993 | n/a | n/a | n/a | 87750 | n/a | n/a | n/a |
| NJ Turnpike (I 95) East Spur | Kearny | Freeway/Interstate | 1995 | n/a | n/a | n/a | 104000 | n/a | n/a | n/a |
| NJ Turnpike (I 95) West Spur | Kearny | Freeway/Interstate | 1995 | n/a | n/a | n/a | 104000 | n/a | n/a | n/a |
| NJ Turnpike (I 95) East Spur | Vince Lombardi Pk. & Ride | Freeway/Interstate | 1991 | n/a | n/a | n/a | 53090 | n/a | n/a | n/a |
| NJ Turnpike Int. 18W Spur | US Rt. 46 & I 80 | Freeway/Interstate | 1994 | 5211 | 5132 | n/a | n/a | n/a | n/a | n/a |
| NJ Turnpike (I 95) | Ridgefield Park | Freeway/Interstate | 1994 | n/a | n/a | n/a | 41450 | n/a | n/a | n/a |
| NJ Turnpike Int. 17 | Route 3/Lincoln Tunnel | Freeway/Interstate | 1994 | 3428 | 3241 | n/a | n/a | n/a | n/a | n/a |
| NJ Turnpike (I 95) East Spur | Cromakill Creek | Freeway/Interstate | 1996 | n/a | n/a | n/a | 107700 | n/a | n/a | n/a |
| Route 3 | Btwn NJ Turnpike Spurs | Freeway | 1990 | 9200 | 8900 | n/a | n/a | n/a | n/a | n/a |
| Pulaski Skyway | ---------- | Freeway | 1992 | n/a | n/a | n/a | 48000 | n/a | n/a | n/a |
| Route I-495 | ---------- | Freeway | 1992 | n/a | n/a | n/a | 116,000 | n/a | n/a | n/a |
| Route 3 | Btwn Rt. 17 & NJ Turnpike | Freeway | 1990 | 10400 | 9550 | n/a | n/a | n/a | n/a | n/a |
| Route 17 | Paterson Plank Rd. | Principal Arterial | 1990 | 5300 | 4900 | n/a | n/a | n/a | n/a | n/a |
| Route 3 | East of Hackensack River | Freeway | 1992 | n/a | n/a | n/a | 139000 | n/a | n/a | n/a |
| Route 3 | Near Paterson Plank Road | Freeway | 1991 | n/a | n/a | n/a | 87560 | n/a | n/a | n/a |
| Route 3 | Btwn Tpk. East & Rts. 1&9 | Freeway | 1990 | 7400 | 6700 | n/a | n/a | n/a | n/a | n/a |
| Route 120/20 /Wash. Ave. | Carlstadt/E. Rutherford | Principal Arterial [1] | 1996 | n/a | n/a | n/a | 34200 | n/a | n/a | n/a |
| Rt. 17 NB on/off Ramps | Paterson Plank Rd. | Principal Arterial | 1999 | 2515 | n/a | n/a | n/a | B | n/a | n/a |
| Route 17 | Carlstadt/Moonachie | Principal Arterial | 1993 | n/a | n/a | n/a | 86580 | n/a | n/a | n/a |
| Route 120/20/Wash. Ave. | Btwn Rt. 3 & Route 17 | Principal Arterial | 1990 | 3710 | 3770 | n/a | n/a | n/a | n/a | n/a |
| Tonnelle Ave. (Rts. 1&9) | County Road | Principal Arterial | 1998 | 3915 | 4521 | 3738 | n/a | C | C | C |
| Tonnelle Ave. (Rts. 1&9) | Jersey City/N. Bergen | Principal Arterial | 1993 | n/a | n/a | n/a | 53580 | n/a | n/a | n/a |
| Belleville Tpk (Route 7) | Kearny near NJ Turnpike | Principal Arterial | 1993 | n/a | n/a | n/a | 10070 | n/a | n/a | n/a |
| Belleville Tpk (Route 7) | near Passaic River | Principal Arterial | 1991 | n/a | n/a | n/a | 15680 | n/a | n/a | n/a |
| Washington Ave. | Empire Blvd | Princ. Arterial | 1999 | 1979 | n/a | n/a | n/a | B | n/a | n/a |
| Tonnelle Ave. (Rts. 1&9) | Secaucus Rd. | Princ. Arterial | 1998 | 3759 | 3869 | n/a | n/a | C | C | n/a |
| Tonnelle Ave. (Rts. 1&9) | near 69th Street (N. Bergen) | Princ. Arterial | 1991 | n/a | n/a | n/a | 36260 | n/a | n/a | n/a |
| Tonnelle Ave. (Rts. 1&9) | near 83rd Street (N. Bergen) | Princ. Arterial | 1996 | n/a | n/a | n/a | 32480 | n/a | n/a | n/a |
| Route 46 | ---------- | Princ. Arterial | 1990 | 5670 | 5200 | n/a | n/a | n/a | n/a | n/a |
| Meadowlands Pkwy | Seaview Drive | Minor Arterial/local | 2000 | n/a | n/a | n/a | n/a | n/a | B | A |
| Moonachie Rd. | Carol Pl. to Rooney Pl. | Minor Arterial[2] | 1998 | n/a | n/a | n/a | 9668 / 9918 | n/a | n/a | n/a |
| Rt. 17 NB on/off Ramps | Moonachie Ave | Minor Arterial | 1999 | 1416 | n/a | n/a | n/a | C | n/a | n/a |

## FIGURE 6.3 (Cont.) Traffic Volume & Level of Service (LOS) by Roadway Classification

| Intersection/Roadway Location | | Roadway | Data | Intersection Vehicle Volume by Peak Hour Period | | | AADT* | Intersection LOS by Peak Hour Period | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Roadname(s) | Roadname(s)/Location | Classification | Year | AM | PM | Saturday | Dir. A / B | AM | PM | Saturday |
| Rt. 17 SB on/off Ramps | Moonachie Ave | Minor Arterial | 1999 | 1083 | n/a | n/a | n/a | E | n/a | n/a |
| Meadowland Pkwy | Route 3 EB Ramp | Minor Arterial | 1998 | 2434 | 3635 | 2821 | n/a | B | C | B |
| County Avenue | Paterson Plank Rd. | Minor Arterial | 1998 | 1596 | 1638 | 1274 | n/a | B | B | B |
| County Avenue | Secaucus Rd. | Minor Arterial | 1998 | 2679 | 2783 | 1520 | n/a | C | F | B |
| Meadowland Pkwy | Secaucus Rd. | Minor Arterial | 1998 | 1614 | 1354 | 594 | n/a | A | A | A |
| County Ave./New County | County Road | Minor Arterial | 1998 | 1286 | 1515 | 675 | n/a | B | F | A |
| New County Ave | Castle Road | Minor Arterial | 1998 | 515 | 456 | 147 | n/a | A | A | A |
| New County Road | Castle Road | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | A | A |
| Route 3 WB Ramp | Meadowlands Parkway | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | B | B |
| Route 3 EB Ramp | Meadowlands Parkway | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | C | C |
| Paterson Plank Road | County Avenue | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | B | B |
| Meadowland Pkwy South | Secaucus Rd. | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | A | A |
| Meadowland Pkwy North | Secaucus Rd. | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | A | A |
| County Ave/County Rd | New County Road | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | F | C |
| County Ave | Secaucus Rd. | Minor Arterial | 2000 | n/a | n/a | n/a | n/a | n/a | D | C |
| Schuyler Ave. | Harrison Ave. | Collector | 1995 | n/a | n/a | n/a | n/a | C | D | n/a |
| Valley Brook Ave | Orient-Way | Collector | 1995 | n/a | n/a | n/a | n/a | C | D | n/a |
| Rutherford Ave. | Orient-Way | Collector | 1995 | n/a | n/a | n/a | n/a | D | D | n/a |
| Rutherford Ave. | Polito Ave. | Collector | 1995 | n/a | n/a | n/a | n/a | D | D | n/a |
| Schuyler Ave. | Belleville Turnpike (Rt. 7) | Collector | 1995 | n/a | n/a | n/a | n/a | D | D | n/a |
| Enterprise Ave. South | Secaucus Rd. | Collector | 1998 | n/a | 1369 | 1042 | n/a | n/a | F | D |
| Enterprise Ave. North | Secaucus Rd. | Collector | 1998 | n/a | 1245 | 1085 | n/a | n/a | F | D |
| Meadowland Pkwy | American Way | Collector | 1998 | n/a | 2819 | 2185 | n/a | n/a | F | C |
| Meadowland Pkwy | Seaview Drive | Collector | 1998 | 866 | 1034 | 305 | n/a | B | B | B |

**Notes**

* AADT - Annual Average Daily Traffic - Data shown by direction of traffic, Dir A / B represents either Northbound / Southbound directions or Eastbound / Westbound directions.

1 - Principal Arterial - Serves primary roadway network connecting collector and freeways with limited access to land uses.

2 - Minor Arterial - Similar to Principal Arterial but minor arterials have lower speed limits and have more access to major land uses.

n/a - Not Available

**FIGURE 6.4 (left)** *An undated aerial view of the District's center. In the foreground, the Eastern Spur of the New Jersey Turnpike crosses Cromakill Creek. Cromakill and Mill creeks meet the Hackensack River at photo center. Giants Stadium and Continental Airlines Arena can be seen in the distance.*

**FIGURE 6.5 (below)** *The newly opened Secaucus Junction promotes the region's passenger rail service as a quality alternative to the automobile for a number of popular destinations. Source: Courtesy of New Jersey Transit.*

## Transit

The District's transit system includes passenger rail service, bus service, and park and ride facilities offering parking for commuters using either rail or bus service. New Jersey Transit (NJ Transit) is the major agency providing both passenger train and bus service in and around the District. NJ Transit has experienced a gain of approximately 35 million passenger trips within the last nine years, a 20 percent increase. Ridership growth can be attributed to an improved economy, growing employment demand, stable transit fares, improved service quality and the implementation of new services. In an attempt to meet growing transit demands, NJ Transit has added 6,800 parking spaces system-wide since 1994.

***Passenger Rail Service***

The passenger rail system, both within the District and statewide, began as several competing private enterprises. All rail companies with passenger lines through the District had destinations that connected the lines to various outlying areas of New Jersey and New York City. The rail system was integrated when NJ Transit took control of the passenger rail service from the Consolidated Rail Corporation on January 1, 1983. The system is now part of a larger rail system that shares tracks with freight service and Amtrak. The existing rail system including the passenger rail lines and stations is shown in Map 10. The active passenger rail lines in and around the District include the Northeast Corridor, Morris and Essex, Main, Bergen, Pascack Valley, and the Port Authority Trans-Hudson Corporation (PATH).

Amtrak provides nationwide passenger rail service and operates on the Northeast Corridor (NEC) Line. The Northeast Corridor is the busiest Amtrak line in the nation, providing metroliner service from Boston to Washington D.C. It traverses the District between Newark and New York, but does not currently have a station stop in the District. The Frank R. Lautenberg Station at Secaucus Junction provides a potential stop in Secaucus. In NJ Transit's Fiscal Year 2001, the NEC had 26.6 million passengers, accounting for 41.6 percent of the total number of passengers that traveled on the entire NJ Transit passenger rail system. The events of September 11, 2001 and the weakened economy decreased ridership on the NEC in 2002. A major cause of this decline was the temporary suspension of PATH service to lower Manhattan. Service resumed in November 2003.

The right-of-way for the West Shore Line follows part of the eastern boundary of the Meadowlands District in Ridgefield. Commuter service along this line ended prior to its being abandoned in 1959. The line is currently used for freight train service only, although NJ Transit is considering the restoration of passenger rail service. The agency is conducting a Major Investment Study (MIS)/Environmental Impact Study (EIS), scheduled to be completed in the spring of 2003.

The primary transit issue for the District is the limited connections with major employment, retail, and distribution centers.

***Bus Service***

Bus service is the major mode of public transportation to employment opportunities within the

District. A total of twenty-three public bus routes provided by NJ Transit and six private bus routes have designated stops around or within the district. The DeCamp Bus Company is the primary private carrier. Statewide, NJ Transit operates 236 bus routes, accumulating 72.6 million annual vehicle revenue miles and serving 152 million passengers. The inter/intrastate bus routes with associated bus route numbers are shown in Map 11.

***Park and Ride Facilities***

The District has three regional park-and-ride facilities for bus passengers and two local park-and-ride facility for rail passengers. Another regional park-and-ride is located just outside the district off I-495 in the Town of Weehawken, enroute to the Lincoln Tunnel. In-District facilities include the following:

- A 1,022-space (includes 22 Disability Parking Spaces) parking lot at the **Lombardi Service Area** in Ridgefield for bus service, operated by the New Jersey Turnpike Authority. NJ Transit reports that in 2002, this park-and-ride lot operated at approximately 70 percent capacity.
- A 1,498-space parking lot in **North Bergen** for bus service, operated by the Port Authority. For 2002, NJ Transit reports that this parking facility operated at 100 percent of its capacity. The majority of the parking lot patrons have Manhattan destinations.
- A 1,000-space parking lot at the **Meadowlands Sports Complex** in East Rutherford for bus service, operated by NJ Transit. It operates at 37 percent of capacity during the daily AM peak period, with 88 percent of riders having destinations in Manhattan.
- A 103-space parking lot at **Harmon Cove** in Secaucus provides access to Bergen Line rail passengers. The lot consistently operates over capacity. A total of 89 percent of the facility's patrons have destinations in Manhattan.
- A 27- space parking lot on **Williams Avenue** in Teterboro, serving the Pascack Valley Line rail passengers. For 2002, NJT reported that this lot consistently operated at 60 percent or more of its capacity.

The buses accessing the Lombardi park-and-ride facility and the North Bergen Park-and-Ride have a combined total of 2,937 daily passengers. Map 11 shows the locations of the District's park-and-ride facilities. There are also park-and-ride lots associated with four train stations located near District boundaries, with a total parking capacity of 832 spaces. In addition to these parking spaces, NJ Transit is constructing a 150-space parking deck near the Rutherford Train Station, scheduled for completion by the end of 2003.

## Goods Movement

The Meadowlands District is home to many warehouses, light industry and commercial businesses that serve the largest market for consumer goods in the country. Economic trends show that the greater metropolitan region is expected to experience continued growth in commercial, office, and retail development (Chapter 8, Economic Vitality). As economic growth continues, so will the demand for freight movement and associated capacities of shipping ports, roadways and railways.

***Intermodal transport*** pertains to the movement of goods via two or more modes of transportation. In general, the movement of goods in an intermodal system occur between ship, rail, and truck modes of transportation, with trucks serving as the primary means of moving goods over short distances. The Meadowlands District has a number of intermodal facilities. Primary facilities include:

- Croxton Yards, a 179-acre facility operated by Norfolk-Southern in Jersey City and Secaucus.
- North Bergen Yard in North Bergen, operated by CSX; ten acres of this facility are in the District.
- Bellmans' Yard, a 42-acre facility in Ridgefield also operated by CSX.
- Little Ferry Yard, a 53-acre rail yard also located in Ridgefield also operated by CSX.
- NYS&W Auto/Lumber Intermodal Facility, a 43-acre rail yard in North Bergen operated by the New York, Susquehanna and Western (NYS&W), a private freight company.
- The Kearny Yard rail facility, of which 154 acres are located in-District, also operated by CSX.
- Resources Intermodal, a 24 acre private rail/truck facility located in North Bergen on Secaucus Road along the Northern Branch.

These facilities have access to major highways and railways that in turn provide access to freight origin points at the Port Newark/Elizabeth Marine Terminal and Newark Liberty International Airport, located a few miles south of the District. The capacities of Port Newark/ Elizabeth Marine Terminal and Newark Liberty International Airport are expected to grow, increasing the need for intermodal facilities. Transportation access and the coordination of modes used in the movement of goods throughout the intermodal system are limitations that need to be resolved prior to expanding the number of intermodal facilities.

The use of ***freight railways***, presented on Map 10, has become more vital with the rising demand to move freight more efficiently, accompanied by increases in traffic congestion. The freight rail companies in the District, operating on segments of former Conrail lines, include Norfolk-Southern and CSX Corporation. Norfolk-Southern Corporation was formed in 1982 with the consolidation of the Norfolk and Western Railway and the Southern Railway. In 1998, the merged Norfolk-Southern obtained permission from the Surface Transportation Board to acquire and operate portions of Conrail's holdings, including routes that reach into the northeastern part of the nation. On June 1, 1999, Norfolk-Southern began operating 7,000 miles of former Conrail routes in the nation. Norfolk-Southern's main freight includes coal, paper, agriculture products, chemicals, automotive parts, automobiles, construction material, and intermodal trailers/containers.

The CSX Corporation was formed in 1980 by the acquisition and merger of the Chessie System Railway and the Seaboard Coast Line Railroad companies. CSX transports freight items such as automobiles, automobile parts, coal, metals/minerals, chemicals, paper/forest, and agricultural products. CSX operates 67 route miles in New Jersey and shares an additional 421 miles of the New Jersey Shared Assets Area (formerly Conrail).

The federal government created Consolidated Rail Corporation (Conrail) in 1976 with the acquisition and merger of Central Railroad of New Jersey, Erie Lackawanna, Lehigh and Hudson River, Lehigh Valley, Penn Central and Reading rail lines. Conrail's creation resulted from the six failing rail companies' potential affect on the overall economy. Their failure mainly stemmed from competition with truck freight transportation and outdated regulations that did not allow rail companies to respond to changing market demands. In 1980, the Staggers Act lessened the constraints imposed on rail companies. Later legislation further assisted rail market competitiveness by transferring passenger rail service to organizations such as Amtrak.

In 1981, Conrail achieved its first annual profit after years of rebuilding rail tracks, locomotives, freight cars and improving freight service. The federal government sold its ownership of Conrail in 1987 to the private sector, achieving the original objective to return the rail system back to financial stability. The for-profit Conrail was sold to CSX Corporation and Norfolk-Southern Corporation in 1997. The US Surface Transportation Board prepared a plan for CSX and Norfolk Southern to operate most of the Conrail lines and facilities. Under the Conrail Shared Assets Operation (CSAO) plan, Conrail maintains control of some lines in the metropolitan areas of New Jersey, Philadelphia and Detroit.

The New York Susquehanna and Western Railroad (NYS&W) also provides freight service along the Northern Branch in the District. NYS&W operates approximately 11 miles of track in the NJMC District and about 105 miles of track throughout New Jersey. The freight line passes through Bergen, Passaic, and Sussex counties into western New York State. The company is exploring options to increase loading and unloading capacity, including the expansion of operations onto a nearby property off Secaucus Road.

NYS&W also operates the Lumber/Intermodal Facility adjacent to the Resources Warehouse in North Bergen. Approximately half a million gross tons of freight pass through this facility each year.

***Trucking terminals*** are centralized truck storage facilities or distribution facilities for warehousing/manufacturing businesses that use trucks as the main transportation mode. They provide a link between trucking services and freight facilities. Truck terminals are generally located in areas that maximize access to both major roadways and commercial centers within the larger regional area. According to the US Department of Commerce, trucks originating from New Jersey delivered over 190 million tons in 1997, approximately 85 percent of all freight transportation modes and slightly less than 24 billion ton-miles.

Positioned within the nation's largest metropolitan market area, the Meadowlands District offers a prime location for trucking services and associated land uses. The major truck routes in the District include Routes 1&9/ Tonnelle Avenue, Route 3, Route 17, the New Jersey Turnpike, Paterson Plank Road/Route 120, County Avenue, Belleville Turnpike and County Road.

## Other

***Alternatives to the automobile*** are gaining in importance, due to fuel costs, vehicle safety, and traffic delays. Presently, automobile use in northern New Jersey area stands at 82.5 percent of all transportation modes. Alternate modes include trains, light rail, buses, dedicated transit routes, ferry service, motorcycling, bicycling and walking. Trip reduction is achieved with some measure of success through alternate work hours, working-from-home, as well as shopping from home by telephone or computer.

The Meadowlands Transportation Brokerage Corporation, known as Meadowlink, is a non-profit organization established in 1983 through a joint venture of the New Jersey Turnpike Authority, New Jersey Sports & Exposition Authority, the NJMC, the Port Authority of NY & NJ and the Meadowlands Chamber of Commerce. The main objective of Meadowlink is to coordinate transportation access for public and private establishments and to reduce traffic congestion in the Meadowlands area through the implementation of vehicle trip reduction measures, such as carpooling, shuttle programs and direct-link services to major employers in the Meadowlands area. Meadowlink also assists corporations with the preparation of Transportation Demand Management (TDM) plans in an effort to analyze employees' transportation needs and works with the public on planning projects that identify new public transit services and pedestrian access. Accomplishments include forty-nine (49) van pools, with approximately 519 total daily passengers, and maintaining a 1,000-person ride-share database for Bergen, Hudson, and Passaic counties.

Meadowlink has a shuttle program that includes nine shuttle routes, three of which serve the District. The three routes include the Meadowlands (Rutherford) Shuttle, providing access from the Rutherford Train Station to the Meadowlands Office Complex; the Newark-Secaucus Shuttle, stopping on County Road in Secaucus; and the Paterson-Secaucus route with a stop on County Avenue. Meadowlink's other shuttle routes include Clifton to Hoboken, New York Night Shuttle from the Reserve Bank in Rutherford to New York City, Jersey City to East Rutherford, Six Flags shuttle, and the Preakness route with stops in Paterson and Wayne. The Jersey City Shuttle provides service to the Federal Reserve Bank Building on Route 17 in East Rutherford.

The ***pedestrian and bicycle access-ways*** in the District are limited in number and quality, due to the concentration of industrial and commercial land uses and the heavily traveled existing roadways. There are no survey studies available to show the relative shares of each transportation mode in the District. For the North Jersey area, the walking mode accounts for 8.5 percent and the bicycle mode, 0.3 percent of the total weekday travel modes. The District's mode of travel shares for pedestrians or cyclists would likely be less, again due to the commercial and industrial nature of the District.

The sidewalks throughout the District vary in condition and location. Newer office/commercial developments tend to have sidewalks that are in fair condition; older industrial and warehouse areas are inconsistent in sidewalk availability and condition. The NJMC, in association with Meadowlink, investigated the pedestrian facilities in various sections of these municipalities:

Carlstadt, North Bergen, Secaucus, and Lyndhurst. The August 2000 study found that the five study areas contain approximately 135,000 linear feet of sidewalks, but had a deficit of more than 440,000 linear feet. Trails and walkways in the District are discussed in more detail in Chapter 5, Environmental Preservation and Enhancement.

The District has one designated bike path in East Rutherford along East Union Avenue east of Route 17 and Murray Hill Parkway from East Union Avenue to Paterson Plank Road. Also, walkway paths in the District do not restrict bicycle access. Major highways prohibit bicycle access due to safety hazards and limited access.

Newark Liberty International Airport and Teterboro Airport are the main providers of ***air transportation*** for the District. Newark Liberty Airport is a 2,027-acre facility located approximately three miles south of the District boundary. It provides both national and international passenger and freight air transportation. The Port Authority of New York and New Jersey (PANY/NJ) operates the airport under a long-term lease with the City of Newark. Newark Liberty International Airport ranked 8$^{th}$ of all U.S. Airports in 2000 with 34,188,702 total passengers; freight airlines transported 1,070,379 tons of cargo and 123,013 tons of mail in 2000. Major freight lines include Federal Express (568,756 short tons or 52.3 percent of total freight in 1998), United Parcel Service (166,670 short tons or 15.3 percent of total freight in 1998), and Airborne Express. Major roadway access includes the New Jersey Turnpike and Routes 1&9.

Teterboro Airport is an 827-acre facility (of which 329 acres are undeveloped) that provides air transportation access for private aircraft owners and local freight companies. No major airline service operates from this facility. Business services include charter flights, aircraft leasing, cargo/shipping, and medically oriented flight activities. It is also designated a "Reliever" by the National Plan of Integrated Airport Systems. Located in the northwest section of the Meadowlands District, the facility is owned and operated by the Port Authority of New York and New Jersey (PA) with management assistance by American Port Services, Incorporated (Amports). Teterboro had tallied 182,888 airline operations (trips) in 2000. The facility receives operating funds through a combination of federal, state, and private sources. It is presently undergoing a $92.4 million capital improvement program.

A major issue for the two airports is the limited land available for growth and expansion. Access delays caused by high traffic volume on major roadways during peak travel periods also contribute to growth limitations at these facilities.

As alternative access to Newark Liberty International Airport, the Port Authority and NJ Transit have developed a rail link originating at Newark's Penn Station. The link was achieved by connecting the airport's monorail line to a new train station in Elizabeth along the Northeast Corridor rail-line, thereby allowing rail passengers to transfer to the airport monorail in 2001.

Teterboro Airport can be accessed by rail indirectly by using the Pascack Valley Rail Line station on Williams Avenue in Teterboro. The infrequency of rail service on the Pascack Valley line does not, however, promote an adequate alternative to roadway access. Since Teterboro does not provide commercial flights, public access is, however, a relatively minor issue. Em-

ployee access to the airport would benefit from additional mass transit opportunities and improved roadway connections.

A system of ***waterways and ports*** also serves the District. The Hackensack River traverses the center of the District and feeds into Newark Bay where it merges with the Passaic River at the tip of Kearny. The Hackensack is a navigable waterway, with the channel depth of 26 feet to 29 feet from its confluence at Newark Bay to Hackensack. The Pulaski Skyway (Route 1& 9), Route 3, and the New Jersey Turnpike spurs all cross the Hackensack River on fixed structure bridges. New Jersey Department of Transportation also operates six movable railroad bridges across the Hackensack River. Bridge structures over the river are required to have a minimum 55-foot clearance.

The use of the Hackensack River as a commercial waterway has lessened over time as changes in the local economy have redirected land use activity from industrial to office, warehousing and distribution. Also, the region has come to rely more on railways and roadways for movement of goods and persons.

Port Newark and the Elizabeth Port Authority Marine Terminal, located on the western shore of Newark Bay, operate as an integrated marine terminal. The complex provides a full range of maritime commerce activities, including major container handling terminals, automobile processing and storage facilities, liquid and solid bulk terminals, breakbulk facilities, warehousing and distribution buildings, trucking firms, and an on-dock rail terminal. Elizabeth is known as "America's Containership Capital." Data from the Port Authority show that the entire New York and New Jersey port system generated 3,050,746 Twenty cubic foot Equivalent container Units (TEUs) in 2000, a 7.8 percent increase from 1999. Intermodal activity associated with this marine terminal is expected to increase significantly over the next five to ten years.

## KEY CONDITIONS

Although the region has an extensive transportation system, it needs greater interconnectivity and capacity to meet current and future demands.

- The roadways that traverse the Meadowlands District are among the most heavily traveled in the nation. More drivers with more cars produce greater travel demands on all major roadways and transit systems.
- Missing connections and operational deficiencies further contribute to traffic delay. The system includes various routes for travel between the suburban areas of New Jersey and New York State to New York City. It is not fully attentive to the presence of significant employment centers in the District or the major sports and exposition venue at the Sports Complex. Patterns of residential and commercial development promote greater distances between origins and destinations, resulting in "sprawl" and even more traffic delay.
- Use of mass transit, including passenger rail and bus service, is low in view of the high degree of urbanization and the overall population density. The lack of transit availability during non-peak commuter periods is a factor that limits its use.
- Facilities for pedestrian movement and bicycling are limited.
- Newark Liberty International and Teterboro airports have limited land available for growth and expansion. Vehicular access delays to these facilities during peak travel times are caused by high traffic volume on major roadways.
- As economic growth continues, so will the already high demand for freight movement and associated capacities of shipping ports, roadways and railways. Positioned within the nation's largest metropolitan market area, the Meadowlands District offers a prime location for intermodal services and related land uses. The use of freight railways has become more vital with the rising demand to move freight more efficiently, but truck access needs to be improved.

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